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# Kansas Enterprise Electronic Preservation (KEEP) System

Technical Briefing and Discussion

August 31, 2010



## KE BARBAN STATE OF THE STATE OF

#### Goals

- Introduce KEEP
- What KEEP means for you
- Feedback and input



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#### What is KEEP?

- Kansas Enterprise Electronic Preservation system
- Trusted digital repository for KS government electronic records with long-term value



## K E E BANGO TO THE STATE OF THE

### Records Management Context



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### Legal Foundation

- Government Records Preservation Act (K.S.A. 45-401 through 45-413)
- Public Records Act (K.S.A. 75-3501 through 75-3520)



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#### Kansas Government Records

"all volumes, documents, reports, maps, drawings, charts, indexes, plans, memoranda, sound recordings, microfilms, photographic records and other data, information or documentary material, storage media or condition of use, made or received by an agency regardless of physical form or characteristics in pursuance of law or in connection with the transaction of official business or bearing upon the official activities and functions of any governmental agency."



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### What is records management?

- Control over records throughout their life cycle
- Ensures that records are maintained until their required retention periods have been met
- Ensures that records are destroyed or transferred to archives when their required retention periods have been met



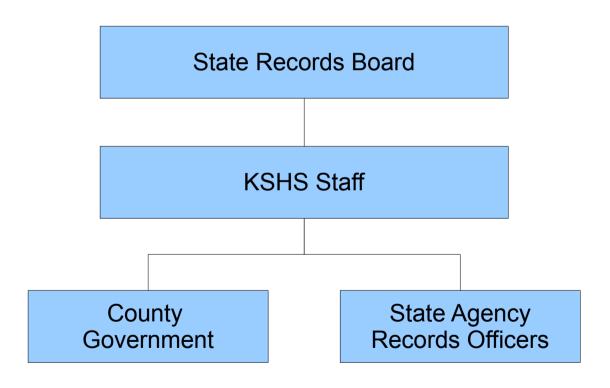
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### Retention & Disposition Schedules

- Identifies and describes records
- Establishes minimum retention period
- Establishes final disposition



# Records Management Governance Executive Branch



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#### KSHS Records Services

- Records scheduling
- State Records Center
- State Archives
- Designed for analog environment



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### Why KEEP?

- Challenges of digital technology
  - Fragile media
  - Technology dependence
  - Technology obsolescence
  - Distributed storage
    - Where is the record copy?
    - Chain of custody
  - Easy to copy, hard to preserve



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### Legal Foundation

- Government Records Preservation Act (K.S.A. 45-401 through 45-413)
- Public Records Act (K.S.A. 75-3501 through 75-3520)
- IT Governance (K.S.A. 75-7201 through 75-7212)



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### HB 2195

#### Signed March 2010

- Statutory foundation to support the transition to a digital archives
- State Archivist recommends to the State Records Board standards for preserving and maintaining the authenticity of digital records.
- Recognizes electronic records maintained in accordance with these standards as having full legal status.
- Authorizes state archivist to certify authenticity of electronic records with his/her electronic signature
- Authorizes cost recovery

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#### ITEC Guidline 2400A

- State Archivist review of CITO reportable projects
  - Both high level and detailed plans
- Electronic Records Retention Statement required at high level
- Are long-term records impacted?
- Estimate KEEP ingest and ongoing costs



# K E E BANGO TO THE STATE OF THE

### **KEEP System Project**



## KE BARBAN STATE OF THE STATE OF

#### What is KEEP?

- Kansas Enterprise Electronic Preservation system
- Trusted digital repository for KS government records with long-term value
  - Long-term = long enough for there to be a concern about changing technologies
  - Long-term for KEEP = 10+ year retention period

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### **KEEP System Goals**

- Enterprise-wide
- Standards and best practices based
- Open source tools
- Access to authentic and authenticated digital records for as long as needed
- Financial sustainability

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#### **KEEP Standards & Best Practices**

#### OAIS

 Open Archival Information System (ISO 14721:2003)

#### PAIMAS

 Producer-Archive Interface Methodology Abstract Standard (ISO 20652:2006)

#### TRAC

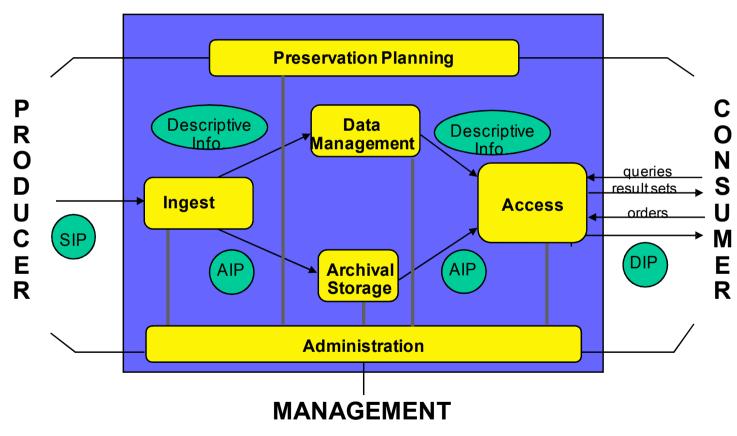
Trustworthy Repositories
 Audit & Certification: Criteria
 & Checklist

#### PREMIS

 Preservation Metadata: Implementation Strategies



#### **OAIS Functional Entities**



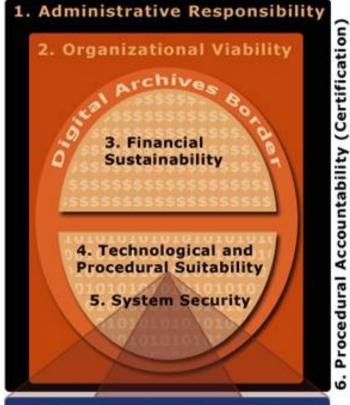
SIP = Submission Information Package

AIP = Archival Information Package

DIP = DisseminationInformationPackage

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#### Merged Digital Preservation Model









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### **Project Organization**



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### **Project Partners**

- Legislature
- Judicial branch
- Information Network of Kansas
- Library of Congress (NDIIPP)

- Executive branch
  - Kansas Historical Society (KSHS)
    - State Archives & State
       Records Center
  - Attorney General's Office
  - DISC



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#### **Business Partners**

- Imerge
- Propylon
- Alexander Open Systems
- EMC
  - VMWare
  - Centera
- Cisco



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### **Steering Committee**

- Jennie Chinn, KSHS (Chair)
- Joe Hennes, Executive CITO
- Don Heiman, Legislative CITO
- Kelly O'Brien, Judicial CITO
- Bill Roth, CITA
- Morey Sullivan, DISC



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### **Project Team**

- Executive Sponsor
  - Pat Michaelis (KSHS)
- Project Managers
  - Terri Clark (Legislature), Technical
  - Matt Veatch (KSHS), Policy

- Development Team
  - Scott Leonard, KSHS
  - Duncan Friend, DISC
  - Carey Brown, KITO



### Stakeholder Advisory Team

- Kathy Sachs, Secretary of State's Office
- Michael Smith, State Records Board
- Lynn Carlin, K-State
- Bryan Dreiling, KITO
- Marilu Goodyear, KU
- Loren Westerdale, Jr.,
   DISC

- Mary Feighny, Attorney General's Office
- Richard Vogt, Sedgwick Co.
- Robert Horton, Minnesota Historical Society
- Christiane Swartz, KHPA



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### Subject Matter Experts

- Policy/Functional
- Technical
- Workshop opportunities



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### Prototype Scope

- Initial ingest of foundational documents for interpreting Kansas law
  - Legislative committee meeting minutes
  - Supreme Court opinions
  - Attorney General opinions



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### Financial Sustainability

- Prototype funding
  - SGF
  - INK grant
  - Library of Congress grant
- Operational funding
  - ITEC Policy 2400A
  - Fees



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#### **Timeline**

- Prototype project
  - Policy framework
    - September 2010
  - Requirements
    - September 2010
  - Detailed design
    - November 2010
  - Prototype build
    - February 2010

- Future phases
  - Pilot
    - March June 2011
  - Production
    - July 2011



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### **KEEP System Requirements**



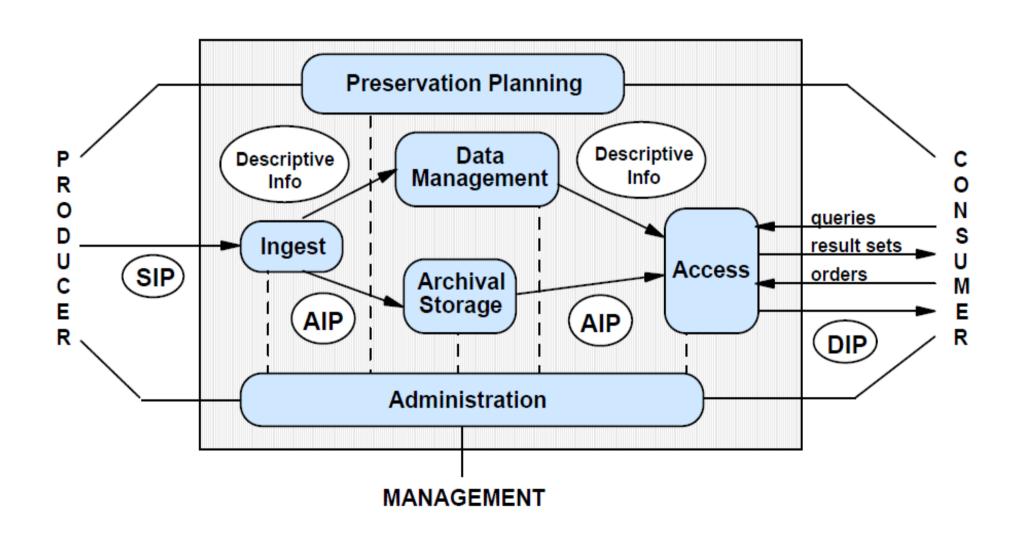
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#### **OAIS-centric**

- Organization
- Terminology
- First step towards OAIS compliance

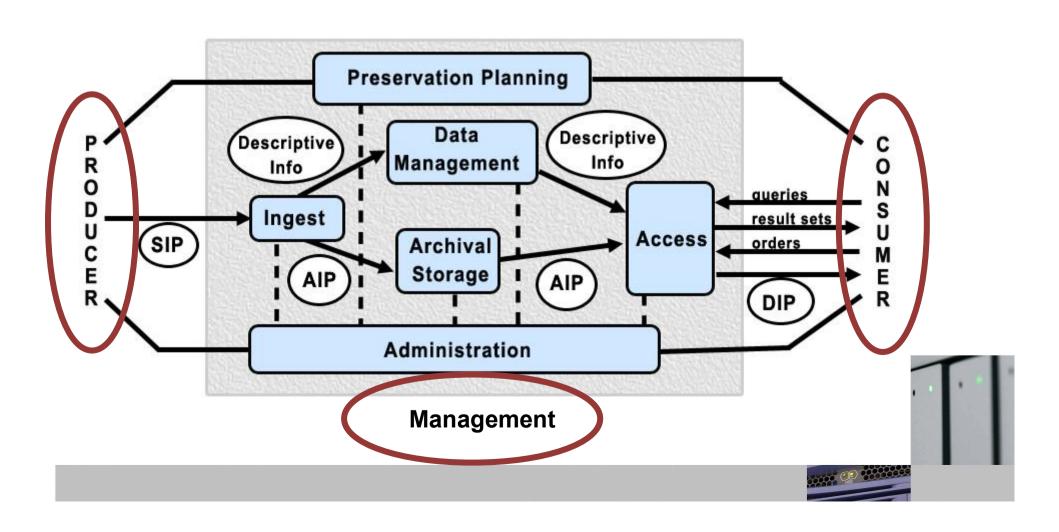


### OAIS Reference Model



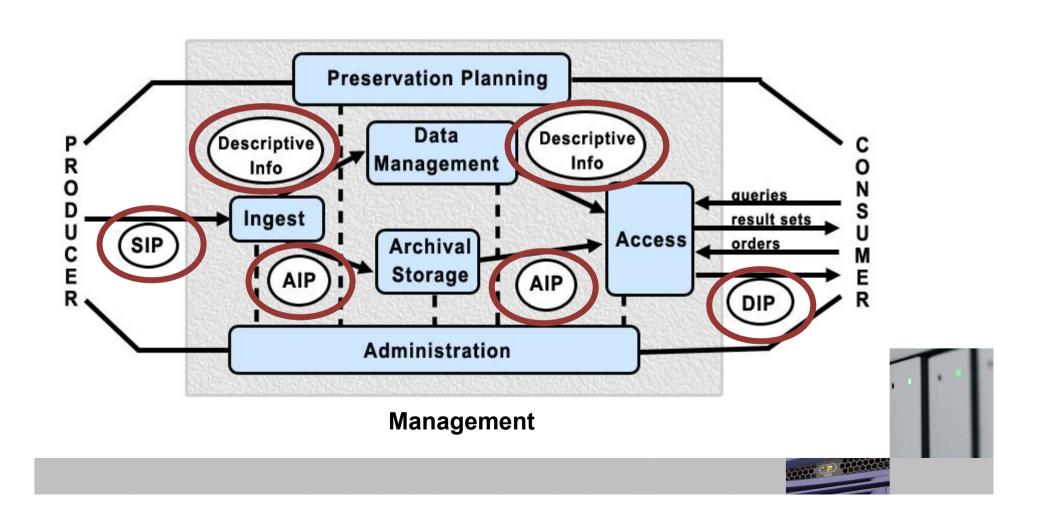
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#### OAIS Actors – the roles



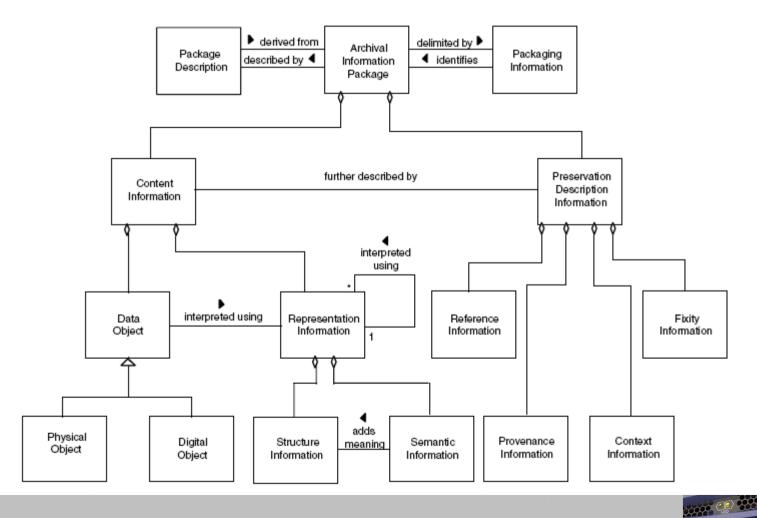
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### OAIS Information Packages – the content



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### Archival Information Package (AIP)



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### Representation Information

- Facilitates the proper rendering, understanding, and interpretation of a digital object's content.
- Imparts meaning to an object's bitstream.
- Example: A sequence of bits represents text encoded as ASCII characters and the text is in English.



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### Preservation Description Information

- Provenance Information
  - Origins of the Content Information
  - Chain of custody
  - Preservation actions history
  - Key to maintaining authenticity
- Context Information
  - Relationship of the content information to its environment (outside of the package)
    - Why created; relationship to other Content Information

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### Preservation Description Information

- Reference Information
  - Unique identifier(s) for Content Information
- Fixity Information
  - Documents authentication mechanisms used to protect the Content Information from undocumented alteration
  - Checksum or digital signature

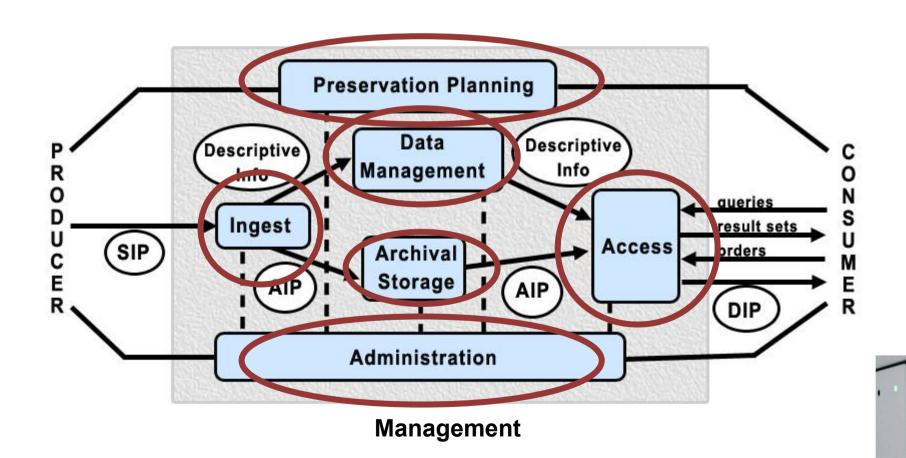


### PREMIS Data Dictionary Example

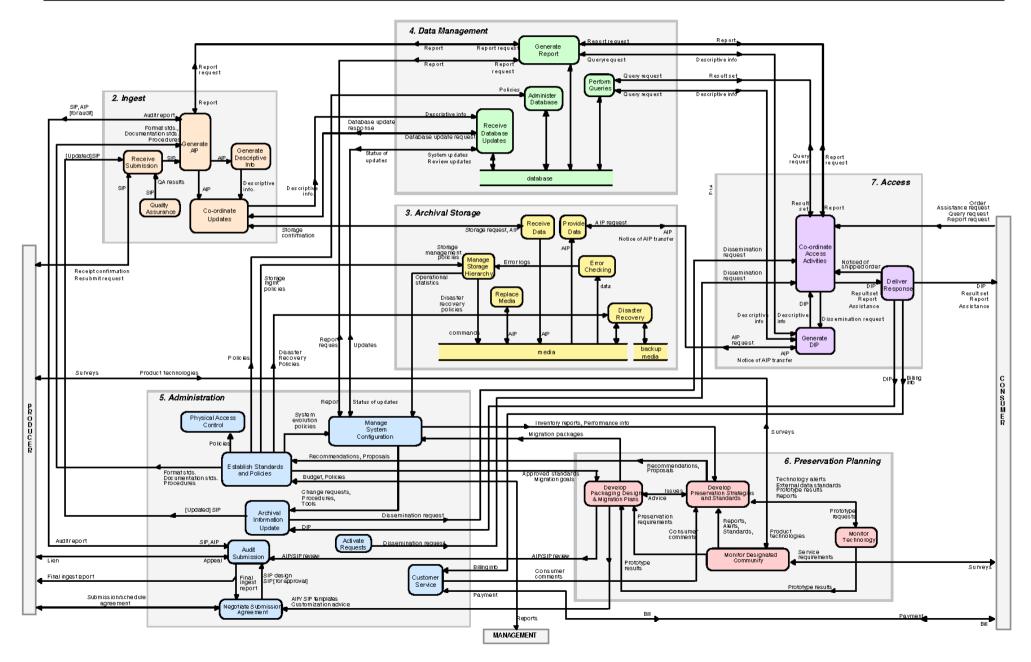
- 1.1 objectIdentifier (M, R)
  - 1.1.1 objectIdentifierType (M, NR)
  - 1.1.2 objectIdentifierValue (M, NR)
- 1.2 objectCategory (M, NR)
- 1.3 preservationLevel (O, R) [representation, file]
- 1.4 significantProperties (O, R)
- 1.5 objectCharacteristics (M, R) [file, bitstream]
  - 1.5.1 compositionLevel (M, NR) [file, bitstream]
  - 1.5.2 fixity (O, R) [file, bitstream]
    - 1.5.2.1 messageDigestAlgorithm (M, NR) [file, bitstream]
    - 1.5.2.2 messageDigest (M, NR) [file, bitstream]
    - 1.5.2.3 messageDigestOriginator (O, NR) [file, bitstream]

- 1.5.3 size (O, NR) [file, bitstream]
- 1.5.4 format (M, R) [file, bitstream]
  - 1.5.4.1 formatDesignation (O, NR) [file, bitstream]
    - 1.5.4.1.1 formatName (M, NR) [file, bitstream]
    - 1.5.4.1.2 formatVersion (O, NR) [file, bitstream]
  - 1.5.4.2 formatRegistry (O, NR) [file, bitstream]
  - 1.5.4.3 formatNote (O, R) [file, bitstream]
  - 1.5.5 creatingApplication (O, R) [file, bitstream]
    - 1.5.5.1 creatingApplicationName (O, NR) [file, bitstream]
    - 1.5.5.2 creatingApplicationVersion (O, NR)
       [file, bitstream]

#### OAIS Actions – the functions



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#### **Common Services**

- Operating system services
- Network services
- Security services



The essential glue for any system

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### **Ingest Functions**

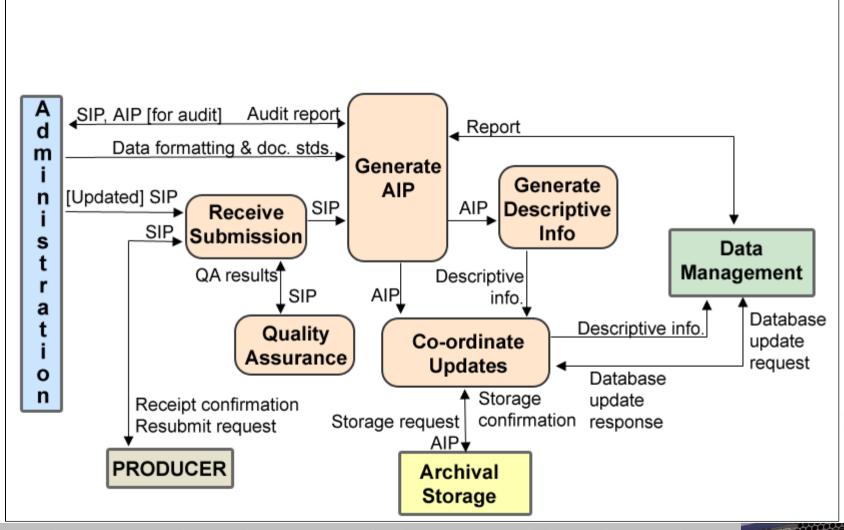
- Receiving SIPs
- Performing QA on SIPs
  - Is SIP authentic, valid, & complete?
  - If not, request resubmission
- Generating an AIP
  - Generate PDI and normalize, if necessary
- Generating descriptive information to facilitate search and retrieval
- Send AIP to to Archival Storage and descriptive information to Data Management

What records will KEEP accept and how?



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### Ingest





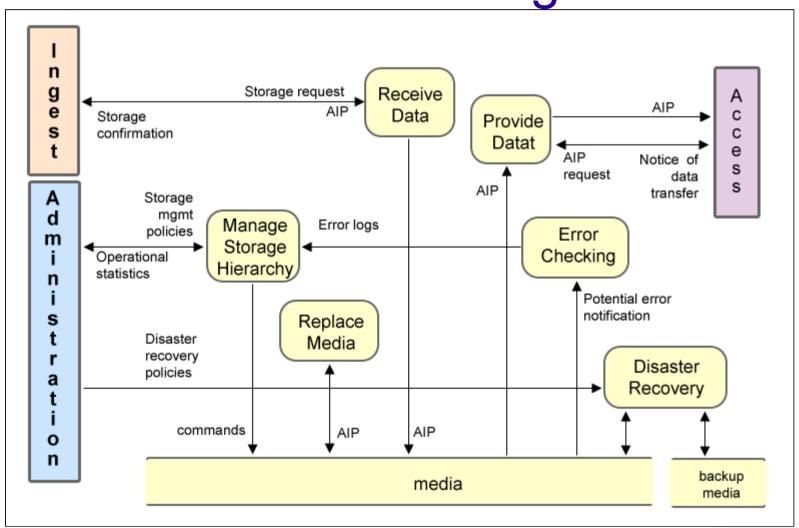
## **Archival Storage Functions**

- Receiving AIPs from Ingest and adding them to permanent storage
- Managing the storage hierarchy
- Refreshing the media on which archives holdings are stored
- Performing routine and special error checking
- Providing disaster recovery capabilities
- Providing AIPs to Access to fulfill orders



Records are stored and maintained – what happens to them over time?

### **Archival Storage**



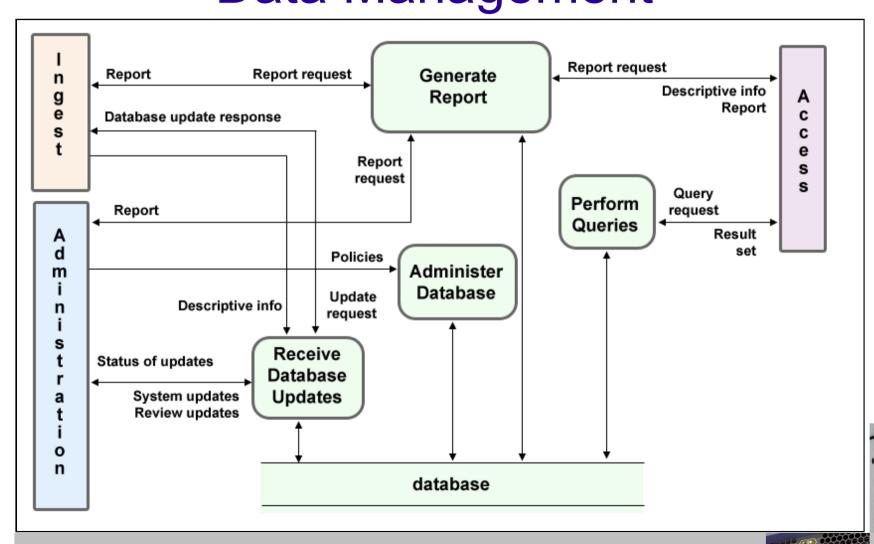
# Data Management Functions

- Administering the archives database that contains:
  - Descriptive Information which identifies and documents archives holdings
  - Administrative data used to manage the archive
- Performing database updates
- Performing queries on the data management data to generate result sets
- Producing reports from these result sets

How will KEEP track, retrieve, & deliver records as needed?

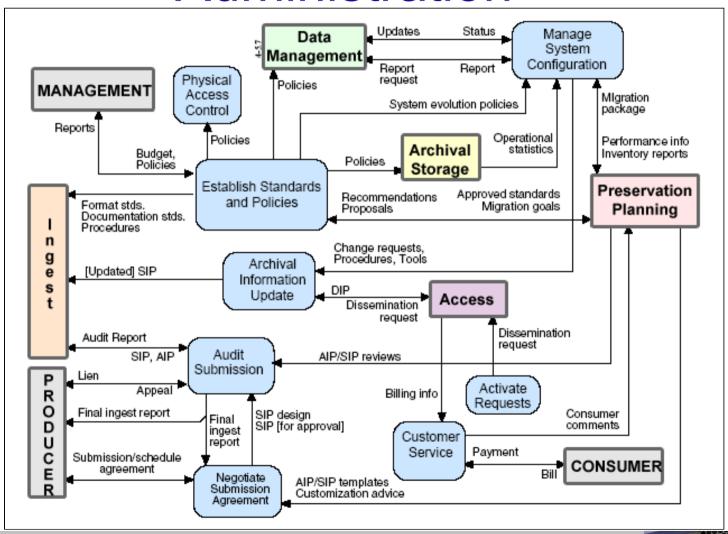


# Data Management



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### Administration



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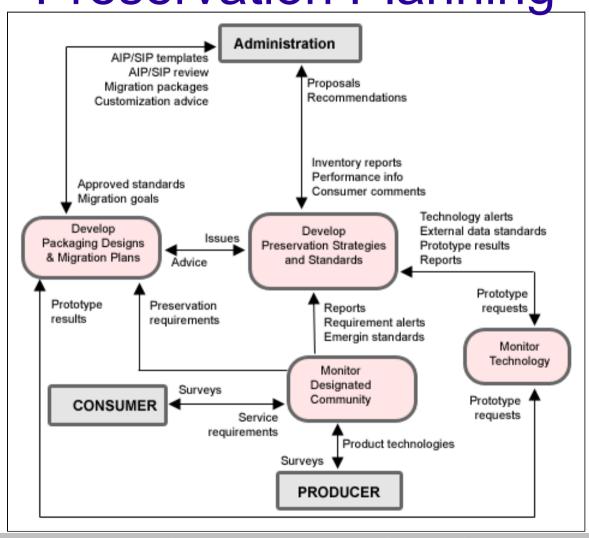
#### **Administration Functions**

- Establishing and maintaining archives standards and policies
- Negotiating submission agreements with Producers
- Auditing submissions to ensure they meet archives standards
- Maintaining configuration management of system hardware and software
- Providing customer support

How will KEEP services & functions be managed over time?



## **Preservation Planning**







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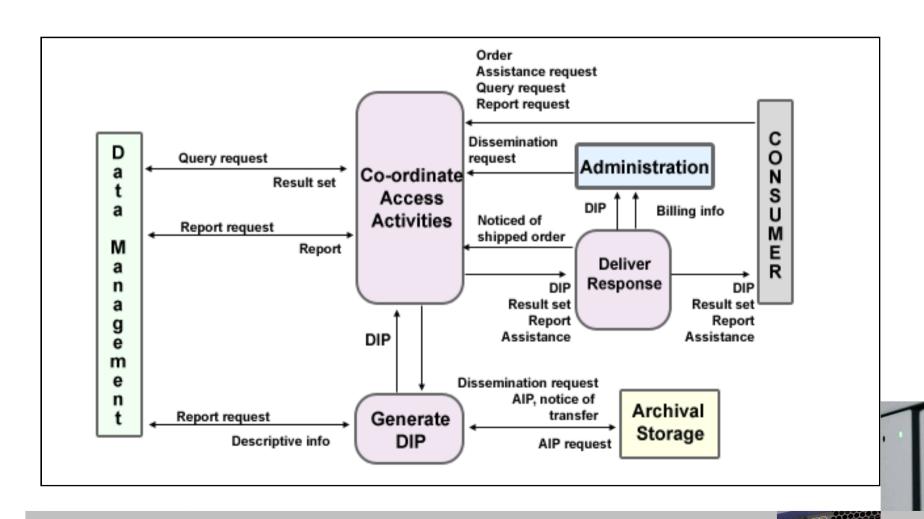
### **Preservation Planning**

- Monitoring changes in the technology environment
- Monitoring needs of the designated community
- Developing preservation standards and strategies
- Developing packaging designs and migration plans
- Recommending preservation actions



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#### Access



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#### **Access Functions**

- Receive requests from Consumers
- Generate and deliver DIPs to Consumers
  - Assembled from descriptive information from Data Management and one or more AIPs from Archival Storage
- Process payments for authenticated records
- Administer restrictions on access



How will KEEP provide access to records?

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### **Next Steps**

- Project communications
  - Newsletter
  - ITAB updates
- Policy framework & requirements acceptance
- Detailed design





Architecture V1.0

